AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (previously presented) A method of ligating a double-stranded end of a double-stranded DNA and a single-stranded end of another double-stranded DNA, wherein the method comprises:

a) contacting, in the presence of a homologous recombinant protein, the single-stranded end of said other double-stranded DNA and the double-stranded end of said double-stranded DNA, wherein said double-stranded DNA comprises a sequence that is homologous to the nucleotide sequence of said single-stranded end, to form a three-stranded structure comprising said single-stranded end and said double-stranded end, and

b) completing the ligation by converting the three-stranded structure into a double-stranded structure by inserting the DNA complex comprising the three-stranded structure into cells and replicating it therein.

2. (currently amended) The method of ligation of claim 1, wherein said ~~three-stranded~~ DNA ~~structural~~ complex is a circular DNA complex having a three-stranded structure in two positions, wherein said three-stranded structure is made by either the ligation of:

a) a double-stranded DNA comprising a single-stranded region at both ends, and

b) a double-stranded DNA having at both ends a double-stranded region comprising sequences that are respectively homologous to said single-stranded nucleotide regions in a); or the ligation of:

c) a double-stranded DNA comprising a ~~singe-stranded~~ single-stranded region at one end and a double-stranded region at the other end, and

d) a double-stranded DNA comprising a double-stranded region at one end having a sequence that is homologous to the nucleotide sequence of said single-stranded nucleotide region in ~~a)~~ c) and a single-stranded region at the other end comprising a sequence that is homologous to the nucleotide sequence of the double-stranded nucleotide region in ~~a)~~ c).

3. (previously presented) The method of ligation of claim 2, wherein the nucleotide sequences of the two single-stranded regions in a) are mutually non-complementary.

4. (previously presented) The method of ligation of claim 2, wherein the two single-stranded region ends in a) are within the same double-stranded DNA.

5. (previously presented) The method of ligation of claim 2, wherein one DNA from a) and b) or one DNA from c) and d) confers the ability of auto-replicating within

competent cells.

6. (currently amended) The method of ligation of claim 5, wherein ~~the other DNA comprises the whole or part of a gene to be cloned.~~

i) the DNA from a) confers the ability of auto-replicating within competent cells and the DNA from b) comprises the whole or part of a gene to be cloned;

ii) the DNA from b) confers the ability of auto-replicating within competent cells and the DNA from a) comprises the whole or part of a gene to be cloned;

iii) the DNA from c) confers the ability of auto-replicating within competent cells and the DNA from d) comprises the whole or part of a gene to be cloned; or

iv) the DNA from d) confers the ability of auto-replicating within competent cells and the DNA from c) comprises the whole or part of a gene to be cloned.

7. (previously presented) The method of ligation of claim 1, wherein the nucleotide sequence of the single-stranded region is at least a 6mer.

8. (currently amended): The method of ligation of claim 1, wherein the homologous recombinant protein is ~~selected from a group consisting of~~ the Rec A protein ~~and proteins that are functionally similar to the Rec A protein~~.

9. (original) The method of claim 1, wherein the contact is done furthermore

under the presence of nucleoside triphosphate or a derivative thereof.

10-11. (canceled)

12. (previously presented): The method of ligation of claim 1, wherein the insertion of the DNA complex comprising a three-stranded structure into cells is done by electroporation.

13. (previously presented): The method of ligation of claim 1, wherein the conversion of the three-stranded structure to a double-stranded structure is done by a nucleic acid modification enzyme.

14-20. (canceled).

21. (currently amended): A gene-cloning kit consisting essentially of the following components:

a) a double-stranded DNA comprising ~~a~~ single-stranded regions at both ends, wherein the nucleotide sequences of these single-stranded regions are mutually non-complementary, wherein said DNA comprises a DNA sequence which confers to the double-stranded region of said DNA, the ability of auto-replicating within competent cells;

b) an oligonucleotide primer comprising as a part of the 5' end sequence, a sequence that is complementary to one single-stranded region of the nucleotide sequence of (a), and is complementary to a part of one end of ~~the~~ a sequence of a gene to be cloned;

c) an oligonucleotide primer comprising as a part of the 5' end sequence, a sequence that is complementary to the other single-stranded region of the nucleotide sequence of (a), and is complementary to a part of the other end of the sequence of the gene to be cloned; and

d) a homologous recombinant protein.

22. (previously presented): The kit of claim 21, wherein the nucleotide sequence of each single-stranded region is at least 6mer.

23. (previously presented): The method of ligation of claim 1, wherein steps a) and b) take place in the absence of DNA ligase.

24. (currently amended): The method of ligation of claim 1, wherein the double-stranded structure resulting from step b) has ~~not~~ no gaps.